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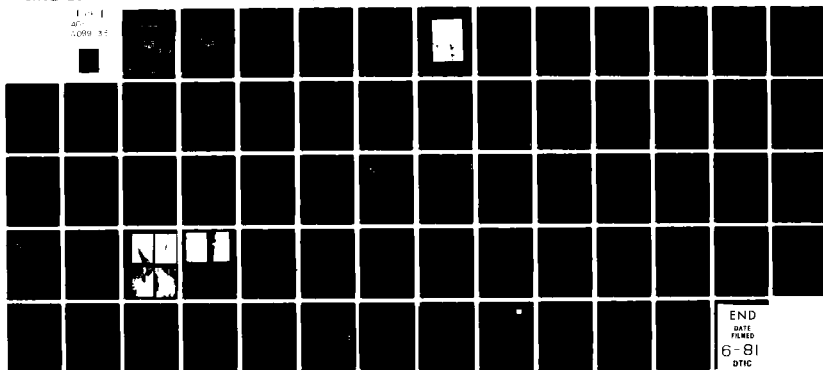
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NATIONAL DAM INSPECTION PROGRAM. SAXE POND DAM (NDI I.D. NUMBER--ETC(U)
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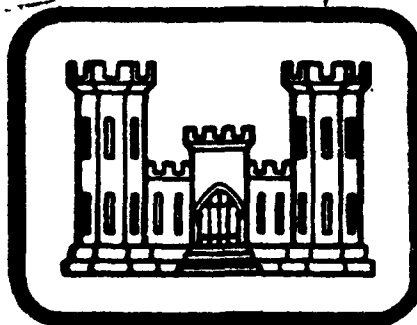
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2 **SAXE POND DAM**

3 (NDI ID NO. PA-729,
DER ID NO. 8-10),

~~WILLIAM AND MICHAEL SAXE~~

7 PHASE I INSPECTION REPORT
1. NATIONAL DAM INSPECTION PROGRAM,



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Prepared By
L. ROBERT KIMBALL & ASSOCIATES
CONSULTING ENGINEERS & ARCHITECTS
EBENSBURG, PENNSYLVANIA
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FOR
DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
BALTIMORE, MARYLAND
21203

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APRIL, 1981

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PENNSYLVANIA

SAXE POND DAM

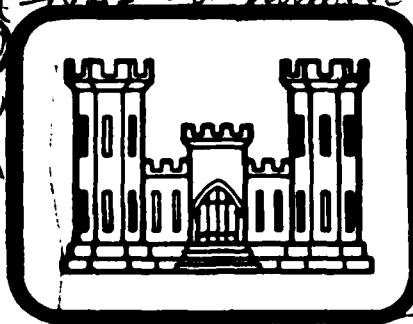
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WILLIAM AND MICHAEL SAXE

PHASE I INSPECTION REPORT

NATIONAL DAM INSPECTION PROGRAM

Phase I Inspiration Report



10) R. Jeffrey Kimball

Prepared By

L. ROBERT KIMBALL & ASSOCIATES

CONSULTING ENGINEERS & ARCHITECTS

EBENSBURG, PENNSYLVANIA

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PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the spillway design flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. The spillway design flood provides a measure of relative spillway capacity and serves as an aid in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

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PHASE I REPORT
NATIONAL DAM INSPECTION REPORT

NAME OF DAM	Saxe Pond Dam
STATE LOCATED	Pennsylvania
COUNTY LOCATED	Bradford
STREAM	North Branch Mehoopany Creek
DATE OF INSPECTION	October 23, 1980
COORDINATES	Lat: 41° 33.0' Long: 76° 19.1'

ASSESSMENT

The assessment of Saxe Pond Dam is based upon visual observations made at the time of inspection, review of available records and data, hydraulic and hydrologic computations, and past operational performance.

The inspection and review of data of the Saxe Pond Dam did not reveal any problems which require emergency action. The dam appears to be in good condition and adequately maintained.

The Saxe Pond Dam is a high hazard-small size dam. The spillway design flood (SDF) for a dam of this size and classification is in the range of the 1/2 PMF to the PMF. The PMF has been selected as the spillway design flood based on the downstream potential for the loss of life. The spillway and reservoir are considered capable of controlling the 1/2 PMF. The 3.41 feet of overtopping associated with the 1/2 PMF is not considered sufficient to cause failure of the structure. Based on criteria established by the Corps of Engineers, the spillway is termed inadequate.

The following recommendations and remedial measures should be instituted immediately.

1. Considerations should be made as to the future use of the power facilities, at the dam. If the facilities are to remain abandoned, the penstock through the dam should be removed or plugged so that future deterioration of the pipe does not lead to potential erosion and possible failure of the structure.

If future plans at the site include renovation of the power facilities, it should be ascertained whether the upstream valve on the penstock is capable of operation. If the valve is operable, it should be lubricated and exercised on a regular basis. If the upstream valve is not operable, it should be made operable.

SAXE POND DAM
PA 729

2. It should be ascertained whether the upstream valve on the 36" drainline is capable of operation. If the valve on the pipe is operable, it should be lubricated and exercised on a regular basis. If the upstream valve on the drainline is not operable, it should be made operable or other provisions should be made for upstream closure of the pipe through the embankment.

3. A regularly scheduled operations and maintenance program should be planned and implemented at the dam to insure the continued safe operation of the structure.

4. A warning system should be developed to warn downstream residents of large spillway discharges or imminent failure of the dam.

5. A safety inspection program should be implemented with inspections at regular intervals by qualified personnel.

SUBMITTED



L. ROBERT KIMBALL & ASSOCIATES
CONSULTING ENGINEERS AND ARCHITECTS

4-6-81

Date

R. Jeffrey Kimball
R. Jeffrey Kimball, P.E.

APPROVED BY:

21 APR 81

Date

James W. Peck
JAMES W. PECK
Colonel, Corps of Engineers
District Engineer



Overview of Saxe Pond Dam.

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PHASE I
NATIONAL DAM INSPECTION PROGRAM

SAXE POND DAM
NDI. I.D. NO. PA 729
DER I.D. NO. 8-10

SECTION 1
PROJECT INFORMATION

1.1 General.

a. Authority. The National Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspection of dams throughout the United States.

b. Purpose. The purpose of the inspection is to determine if the dam constitutes a hazard to human life or property.

1.2 Description of Project.

a. Dam and Appurtenances. The Saxe Pond Dam is an earthfill dam with a dry masonry rubble downstream face (150 feet long and 17 feet high) with an approximate 6 inch thick concrete cap. The upstream and downstream face of the rubble are near vertical. Earthfill was placed against the upstream face of the rubble, and the slope of the fill was 2H:1V. The crest width of the dam is 6 feet. A 7-foot-wide bench exists along the downstream face of the dam, 8 feet below the top of dam. A township highway bridge is located approximately 15 feet downstream of the dam.

The broad crested spillway located at the center of the structure, consists of a recessed area at the top of dam. The spillway (recessed section) is approximately 2 feet deep and 66 feet long. Flow from the spillway is discharged through a natural stream below the dam. Discharges from the Saxe Pond Dam flow through a culvert under the township road downstream of the dam.

An abandoned powerhouse is located immediately downstream of the township roadway adjacent to the left downstream face of the culvert. The abandoned powerhouse is presently utilized as a fishing camp.

b. Location. The dam is located approximately 2 miles northwest of the Village of Colley, Wilmot Township, Bradford County, Pennsylvania. The Saxe Pond Dam can be located on the Colley, U.S.G.S. 7.5 minute quadrangle.

c. Size Classification. The Saxe Pond Dam is a small size dam (17 feet high, 264 acre-feet).

d. Hazard Classification. The Saxe Pond Dam is a high hazard dam. Downstream conditions indicate that the loss of more than a few lives is probable should the structure fail. One home is located approximately 1/2 mile downstream of the dam and a fishing camp is located immediately downstream of the dam.

e. Ownership. The Saxe Pond Dam is owned by Messrs. William and Michael Saxe. Correspondence should be addressed to:

Mr. William Saxe
R.D. #2
Dushore, Pennsylvania 18614
717/928-8228

f. Purpose of Dam. The Saxe Pond Dam is used for the purpose of recreation.

g. Design and Construction History. The construction of the Saxe Pond Dam was completed between 1926 and 1929. Based on information contained in the application for permission to build the structure, the dam was originally constructed in connection with a small power project. A head of 12 feet was to be developed and equipment was to be installed to generate about 25 horsepower. The power generated was to be used to run a sawmill. The construction of the dam was completed by the owner.

h. Normal Operating Procedures. No operations are conducted at the dam. It was reported by the owners, Messrs. William and Michael Saxe, that the power generator had not been operated since the early 1930's.

1.3 Pertinent Data.

a. Drainage Area. 3.13 square miles

b. Discharge at Dam Site (cfs).

Maximum flood at dam site	Unknown
Drainline capacity at normal pool (approximate)	100
Spillway capacity at top of dam	415

c. Elevation (U.S.G.S. Datum) (feet). - Field survey based on a spillway crest elevation, 1570.0 feet interpolated from U.S.G.S. quadrangle.

Top of dam - low point	1571.6
Top of dam - design height	1572.0
Maximum pool - design surcharge	Unknown
Normal pool	1570.0
Drainline entrance invert (approximate)	1561.0
Drainline exit invert	1560.9
Spillway crest	1570.0
Maximum tailwater	Unknown
Toe of dam	1555.0

d. Reservoir (feet).

Length of maximum pool (top of dam)	3600
Length of normal pool	3300

e. Storage (acre-feet).

Normal pool	154
Top of dam	264

f. Reservoir Surface (acres).

Top of dam	73
Normal pool	64
Spillway crest	64

g. Dam.

Type	Dry masonry with upstream earthfill
Length (including spillway)	150
Height	17 feet
Top width	6 feet
Side slopes - upstream	2H:1V (earthfill)
- downstream	Vertical (rubble)
Zoning	None
Impervious core	None
Cutoff	None
Grout curtain	None

h. Reservoir Drain.

Type	36" diameter steel riveted pipe
Length (approximate)	22 feet
Closure	Gate valve
Access	Presently, none
Regulating facilities	Gate valve, with winch removed

i. Spillway. (Recessed section)

Type	Broad crest
Length	66 feet
Crest elevation	1570.0
Upstream channel	Lake
Downstream channel	Natural streambed

SECTION 2 ENGINEERING DATA

2.1 Design. Review of available information in the files of the Commonwealth of Pennsylvania, Department of Environmental Resources, revealed that some correspondence, one design drawing, photographs and permit information were available. Mr. William Saxe and Mr. Michael Saxe, co-owners, accompanied the inspection team during the inspection of the dam. The owners of the dam did not provide any additional information.

2.2 Construction. The construction of the Saxe Pond Dam was completed during the period 1926 through 1929. No other information is available on the construction of the dam. It appears as though the original owner of the dam, Mr. William Saxe, Sr., completed the construction of the dam.

2.3 Operation. No operations are presently conducted at the dam. The power facilities at the dam have not been operated since the early 1930's.

2.4 Evaluation.

a. Availability. Engineering data were provided by PennDER, Bureau of Dams and Waterway Management. The owners of the dam are Mr. William and Michael Saxe. Both Mr. William Saxe and Mr. Michael Saxe accompanied the inspection team during the inspection and were interviewed in regards to the operation and maintenance of the dam.

b. Adequacy. This Phase I Report is based on the visual inspection and hydrologic and hydraulic analysis. Sufficient information exists to complete a Phase I Report.

SECTION 3
VISUAL INSPECTION

3.1 Findings.

a. General. The onsite inspection of the Saxe Pond Dam was conducted by personnel of L. Robert Kimball and Associates on October 23, 1980. The inspection consisted of:

1. Visual inspection of the retaining structure, abutments and toe.
2. Examination of the spillway facilities, exposed portion of any outlet works and other appurtenant works.
3. Observations affecting the runoff potential of the drainage basin.
4. Evaluation of the downstream area hazard potential.

b. Dam. The dam appears to be in good condition and adequately maintained. From a brief survey conducted during the inspection, it was noted that the low spot on the crest of the dam exists at the top left edge of the spillway crest. It was observed during the inspection that a new concrete cap had been placed on the structure. The concrete appeared to be in good condition. The dam was constructed with dry rubble masonry with an upstream earthfill. No concrete exists on the downstream face of the structure or on the bench located along the downstream face of the structure. The rubble masonry appeared to be in good condition and well maintained.

The spillway (normal overflow section) for the structure consists of an approximate 2-foot-deep recessed area near the center of the structure. It was observed during the inspection that the dam could sustain a limited overtopping.

Two 36" diameter steel riveted pipes were observed existing through the structure. One pipe was observed existing through the left section of the structure, and it was apparent that the pipe served as a penstock for the power facilities located in the abandoned powerhouse downstream of the dam. The second pipe was located near the center of the structure and appeared to serve as the drainline for the reservoir. The pipe showed some signs of deterioration, and it was observed that no flow was discharging from the pipe.

c. Appurtenant Structures. Information contained in the DER files suggest that a winch had existed on the upstream end of the drainline which served to control the gate valve. No regulating device for the gate valve was observed during the inspection. Information in the DER files also suggests that a gate valve stem once existed on the upstream end of the 36" pipe which served as a penstock

for the power facilities. No valve stem or other control was observed during the inspection. An inspection of the power facilities located in the powerhouse downstream of the dam was made. The generating facilities appeared to be in a deteriorating condition. The owners of the dam, Messrs. William and Michael Saxe, reported that the facilities had not been operated since the early 1930's. No seepage was observed in the area of the power facilities.

d. Reservoir Area. The majority of the watershed area consists of open farmland. The reservoir slopes are gentle and do not appear to be susceptible to massive landslides which would affect the storage volume of the reservoir or cause overtopping of the dam by displacing water.

e. Downstream Channel. The downstream channel of the Saxe Pond Dam consists of the north branch of the Mehoppany Creek. Several homes exist approximately 1/2 mile downstream of the dam. A fishing camp is located immediately downstream of the dam.

3.2 Evaluation. The masonry rubble structure appeared to be in good condition and adequately maintained. No erosion or seepage was observed in the area of the structure. The power facilities appeared to be in a deteriorating condition. No regulating facilities are present for the 36" drainline or the 36" penstock. The entire dam was observed as being capable of sustaining a limited overtopping.

SECTION 4
OPERATIONAL PROCEDURES

4.1 Procedures. Normally, the water level in the reservoir is maintained at the spillway crest elevation, 1570.0. No other procedures exist concerning the operation of the dam. The abandoned power facilities have not been operated since the early 1930's.

4.2 Maintenance of the Dam. No planned maintenance schedule exists for the Saxe Pond Dam. Maintenance of the dam is completed on an unscheduled, as-needed basis.

4.3 Maintenance of Operating Facilities. No planned maintenance program exists for the operating facilities at the dam. The power facilities at the site have not been operated since the early 1930's. No maintenance is conducted on the power facilities.

4.4 Warning System in Effect. There is no warning system in effect to warn downstream residents of large spillway discharges or imminent failure of the dam.

4.5 Evaluation. The condition of the dam is considered good. There is no warning system in effect to warn downstream residents. An emergency action plan should be available for every dam in the high and significant category. Such plans should outline actions taken by the operator to minimize downstream effects of an emergency and should include an effective warning system. An emergency action plan has not been developed, and the owner should develop such an action plan.

The lack of regulating devices for the control facilities is considered a deficiency. Earthfill on the upstream face of the structure has apparently covered whatever facilities existed to control discharge through the drainline. If no future plans exist to repair the power generating facility, the penstock should be removed or filled to reduce the potential for deterioration of the pipe and possible failure of the structure. The drainline inlet and regulating device should be located and made operable.

SECTION 5 HYDRAULICS AND HYDROLOGY

5.1 Evaluation of Features.

a. Design Data. The DER files did not contain any significant hydraulic or hydrologic design calculations used in the design of these facilities. A design drawing contained in the DER files was utilized for the purposes of this report.

b. Experience Data. No rainfall, runoff or reservoir level data were available. The spillway reportedly has functioned adequately in the past.

c. Visual Observations. The spillway for the Saxe Pond Dam appeared to be in good condition and well maintained. It was observed during the inspection that the entire crest of the dam was capable of sustaining a limited overtopping. Based on a brief survey conducted during the inspection, it was determined that the low spot elevation on the crest of the dam was located adjacent to the left end of the recessed area on the crest (spillway). It was also noted during the inspection that the entire dam could serve as the spillway for the purposes of the analysis.

d. Overtopping Potential. Overtopping potential was investigated through the development of the probable maximum flood (PMF) for the watershed and the subsequent routing of the PMF and fractions of the PMF through the reservoir and spillway.

The Corps of Engineers, Baltimore District, has directed that the HEC-1 Dam Safety Version systemized computer program be utilized. The program was prepared by the Hydrologic Engineering Center (HEC), U.S. Army Corps of Engineers, Davis, California, July, 1978. The major methodologies or key input data for this program are discussed briefly in Appendix D.

5.2 Evaluation Assumptions. To enable completion of the hydraulic and hydrologic analysis for this structure, it was necessary to make the following assumptions.

1. Pool elevation prior to the storm was assumed to be at the crest of the recessed area along the top of dam (normal overflow section) at elevation, 1570.0.

2. The entire dam was considered to be capable of sustaining a limited overtopping. Since the entire dam would be considered as the spillway, the limitation for the overtopping would be relative to the stability of the structure during a prolonged overtopping.

3. Due to the input requirements for the HEC-1 program, the top of dam was considered to be the low spot elevation on the top of dam at the top left edge of the normal overflow section.

5.3 Summary of Overtopping Analysis. Complete summary sheets for the computer output are presented in Appendix D.

Peak inflow (PMF) 11580 cfs
Spillway capacity (recessed section) 415 cfs

a. Spillway Adequacy Rating. The Spillway Design Flood (SDF) for a dam of this size and classification is in the range of 1/2 PMF to the PMF. The spillway design flood for this dam was selected to be the PMF based on the downstream potential for loss of life. Based on the following definition provided by the Corps of Engineers, the spillway is rated as inadequate as a result of our hydrologic analysis.

Inadequate - All high hazard dams not capable of passing the spillway design flood (PMF).

5.4 Summary of Dam Breach Analysis. The entire crest of the dam serves as a spillway. Natural ground was excavated prior to construction of the dam. The abutments of the dam exist in natural ground, and the area at either abutment is flat, and not subject to major erosion. The 3.41 feet of overtopping for approximately 11 hours is not considered sufficient to cause failure of the structure. As the subject dam is considered capable of sustaining at least 1/2 the PMF without causing failure of the structure due to overtopping, it was not necessary to perform the dam breach analysis and downstream routing of the flood wave.

SECTION 6 STRUCTURAL STABILITY

6.1 Evaluation of Structural Stability.

a. Visual Observations. The Saxe Pond Dam appeared to be in good condition and adequately maintained. The visible portion of the dry rubble masonry structure showed no significant signs of deterioration. It was observed that during the inspection that the concrete cap on the crest of the structure had recently been repaired or reconstructed. The concrete appeared to be in good condition, and no cracks were observed in the cap.

No seepage was observed on the downstream face or at the toe of the structure. Two 36" diameter steel riveted pipes exist through the structure. One pipe (powerhouse penstock) is located near the left edge of the structure and the second pipe (drainline) was located near the center of the structure. It was noted during the inspection that no discharge was observed from the drainline. An abandoned powerhouse is located approximately 30 feet downstream of the structure. The facility was inspected and no seepage was observed in the area of the powerhouse. It was reported by the owners, who accompanied the inspection team, that the facility had not been operated since the early 1930's.

b. Design and Construction Data. One drawing was available in the files provided by the PennDER. No other design or construction data were available for review. Based on information contained in the DER files, it appears as though the owner designed and constructed the dam.

c. Operating Records. No operating records exist for the structure. No operations are presently conducted at the dam.

d. Post Construction Changes. No post construction changes are known to have occurred. Information contained in the DER files indicate that both 36" pipes through the structure were originally equipped with regulating devices on the upstream face of the structure. No regulating devices were observed during the inspection and it is evident that the devices had been removed sometime after construction of the dam.

e. Seismic Stability. The dam is located in seismic zone 1. No seismic stability analyses have been performed. Normally, it can be considered that if a dam in this zone is stable under static loading conditions, it can be assumed safe for any expected earthquake loading. No obvious structural deficiencies were observed during the inspection therefore, the dam is considered safe for earthquake loads.

SECTION 7
ASSESSMENT AND RECOMMENDATIONS/REMEDIAL MEASURES

7.1 Dam Assessment.

a. Safety. The dam appears to be in good condition and adequately maintained. No seepage was observed on the downstream face or along the toe of the structure. The dry rubble masonry showed no signs of significant deterioration.

The abandoned penstock appears to no longer serve the purpose for which it was originally intended. Its existence through the structure provides the potential for deterioration of the pipe and potential erosion of the structure. The penstock should be removed or plugged if future plans at the dam do not incorporate the repair of the power facilities.

It was observed during the inspection that the entire dam could be overtopped for a limited duration without causing significant damage to the structure. The analysis of the structure included the consideration of the entire dam as a spillway.

The Saxe Pond Dam is a high hazard-small size dam. The spillway design flood (SDF) for a dam of this size and classification is in the range of the 1/2 PMF to the PMF. The PMF has been selected as the spillway design flood based on the downstream potential for the loss of life. The spillway and reservoir are considered capable of controlling the 1/2 PMF. The 3.41 feet of overtopping associated with the 1/2 PMF is not considered sufficient to cause failure of the structure.

b. Adequacy of Information. Sufficient information is available to complete a Phase I Report.

c. Urgency. The recommendations suggested below should be implemented immediately.

d. Necessity for Further Investigation. No further investigations are required.

7.2 Recommendations/Remedial Measures.

1. Considerations should be made as to the future use of the power facilities, at the dam. If the facilities are to remain abandoned, the penstock through the dam should be removed or plugged so that future deterioration of the pipe does not lead to potential erosion and possible failure of the structure.

If future plans at the site include renovation of the power facilities, it should be ascertained whether the upstream valve on the penstock is capable of operation. If the valve is operable, it should be lubricated and exercised on a regular basis. If the upstream valve is not operable, it should be made operable.

2. It should be ascertained whether the upstream valve on the 36" drainline is capable of operation. If the valve on the pipe is operable, it should be lubricated and exercised on a regular basis. If the upstream valve on the drainline is not operable, it should be made operable or other provisions should be made for upstream closure of the pipe through the embankment.

3. A regularly scheduled operations and maintenance program should be planned and implemented at the dam to insure the continued safe operation of the structure.

4. A warning system should be developed to warn downstream residents of large spillway discharges or imminent failure of the dam.

5. A safety inspection program should be implemented with inspections at regular intervals by qualified personnel.

APPENDIX A
CHECKLIST, VISUAL INSPECTION, PHASE I

CHECK LIST
VISUAL INSPECTION
PHASE I

NAME OF DAM Saxe Pond Dam COUNTY Bradford STATE Pennsylvania ID# 729
TYPE OF DAM Dry rubble masonry HAZARD CATEGORY High
DATE(s) INSPECTION October 23, 1980 WEATHER Clear and cold TEMPERATURE 20°
POOL ELEVATION AT TIME OF INSPECTION 1568.2 M.S.L. TAILWATER AT TIME OF INSPECTION None M.S.L.

INSPECTION PERSONNEL:

R. Jeffrey Kimball, P.E. - L. Robert Kimball and Associates

James T. Hockensmith - L. Robert Kimball and Associates

O.T. McConnell - L. Robert Kimball and Associates

William and Michael Saxe - Co-owners

O.T. McConnell

RECORDER

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS	Unobservable.	
UNUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	Unobservable.	
SLOUGHING OR EROSION OF EMBANKMENT AND ABUTMENT SLOPES	Unobservable.	
VERTICAL AND HORIZONTAL ALIGNMENT OF THE CREST	Unobservable.	
RIPRAP FAILURES	Unobservable.	

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
VEGETATION	Unobservable.	
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM	Unobservable.	
ANY NOTICEABLE SEEPAGE	Unobservable.	
STAFF GAUGE AND RECORDER	Unobservable.	
DRAINS	Unobservable.	

CONCRETE/MASONRY DAMS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
ANY NOTICEABLE SEEPAGE	No seepage visible on the downstream face of the structure or along the toe.	
STRUCTURE TO ABUTMENT/EMBANKMENT JUNCTIONS	Showed no visible signs of stress.	
DRAINS	None.	
WATER PASSAGES	Abandoned penstock exists near the left edge of the dam.	
FOUNDATION	No visible deficiencies observed.	

CONCRETE/MASONRY DAMS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS CONCRETE SURFACES	None. Concrete cap on structure recently repaired or reconstructed. Concrete appeared to be in good condition.	
STRUCTURAL CRACKING	None.	
VERTICAL AND HORIZONTAL ALIGNMENT	Appear all right.	
MONOLITH JOINTS	Not applicable.	
CONSTRUCTION JOINTS	Not applicable.	
STAFF GAUGE OR RECORDER	Not applicable.	

OUTLET WORKS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CRACKING AND SPALLING OF CONCRETE SURFACES IN OUTLET CONDUIT	Not applicable.	
INTAKE STRUCTURE	Not observed.	
OUTLET STRUCTURE	Abandoned power facilities.	
OUTLET CHANNEL	Natural streambed.	
EMERGENCY GATE	Unobserved.	

UNGATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE WEIR	Broad crest. Entire structure serves as a spillway.	
APPROACH CHANNEL	Unrestricted - lake.	
DISCHARGE CHANNEL	Natural stream.	
BRIDGE AND PIERS	One township road and culvert located approximately 15 foot downstream of the dam.	The location of the structure not considered as hampering the discharge potential of the structure.

GATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE SILL	Not applicable.	
APPROACH CHANNEL	Not applicable.	
DISCHARGE CHANNEL	Not applicable.	
BRIDGE AND PIERS	Not applicable.	
GATES AND OPERATION EQUIPMENT	Not applicable.	

DOWNSTREAM CHANNEL

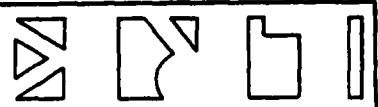
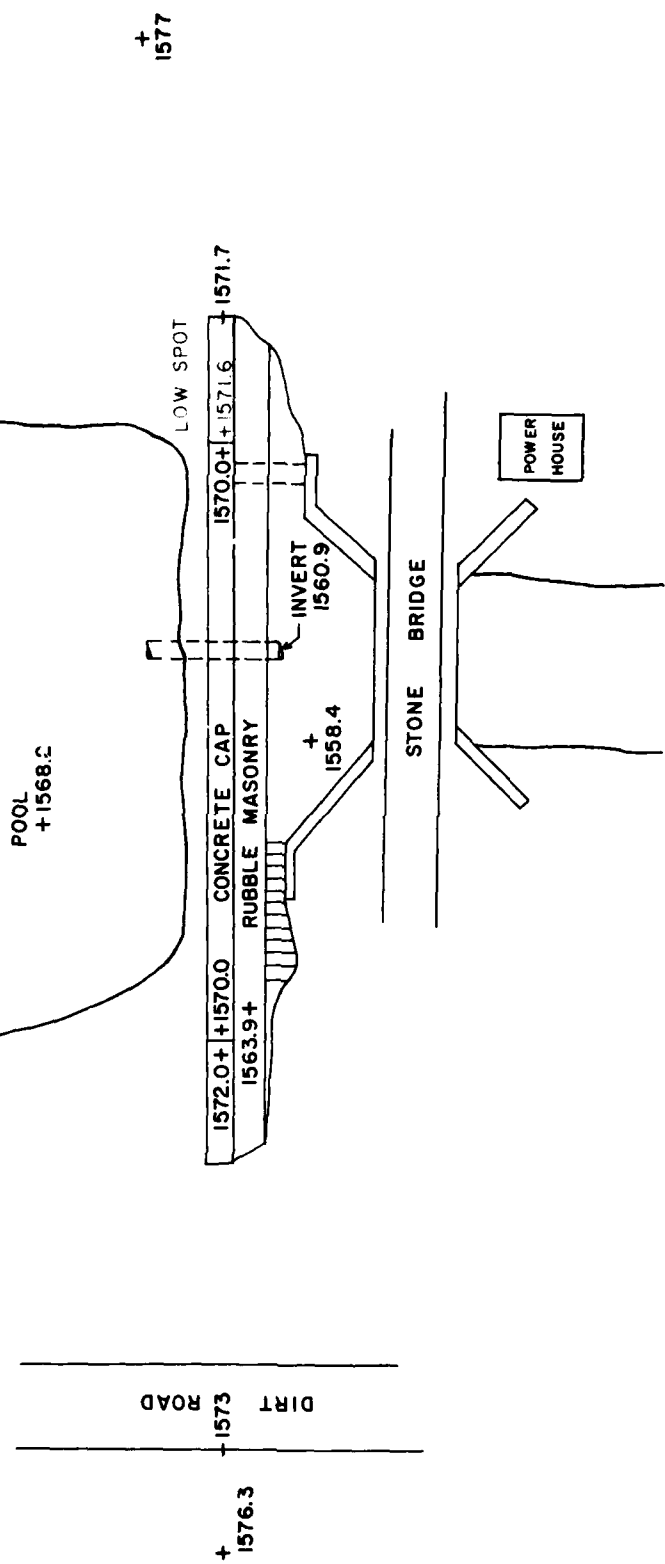
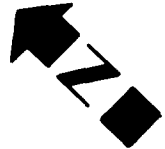
VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONDITION (OBSTRUCTIONS, DEBRIS, ETC.)	A township roadway bridge exists approximately 15 feet downstream of the structure. An approximate 12 foot by 15 foot opening under the bridge was considered capable of carrying a significant flow. The downstream channel for the Saxe Pond Dam is moderately wide for a distance of approximately 2 miles at which point the stream passes through the Village of Colley.	
SLOPES	Appear to be stable.	
APPROXIMATE NO. OF HOMES AND POPULATION	Several homes - 10 people within 1/2 mile of the dam. One fishing camp located immediately downstream of the roadway culvert is occupied on a temporary basis during the fishing season.	

RESERVOIR

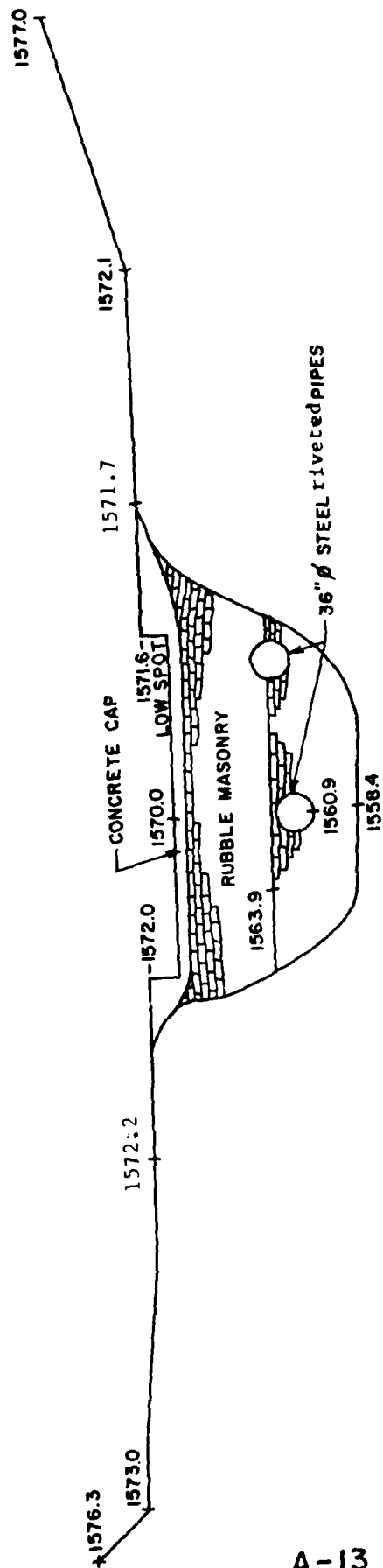
VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SLOPES	Gentle to moderate slopes. Appear stable.	
SEDIMENTATION	Unknown.	

INSTRUMENTATION

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
MONUMENTATION/SURVEYS	None.	
OBSERVATION WELLS	None.	
WEIRS	None.	
PIEZOMETERS	None.	
OTHER	None.	



SAXE POND DAM
SCALE: 1" = 30'



PROFILE
LOOKING UPSTREAM
SCALE : HORIZ. 1" = 30'
VERT. 1" = 10'

SAXE POND DAM

A-13

APPENDIX B
CHECKLIST, ENGINEERING DATA, DESIGN, CONSTRUCTION, OPERATION, PHASE I

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
PHASE I

NAME OF DAM Saxe Pond Dam
ID# 729

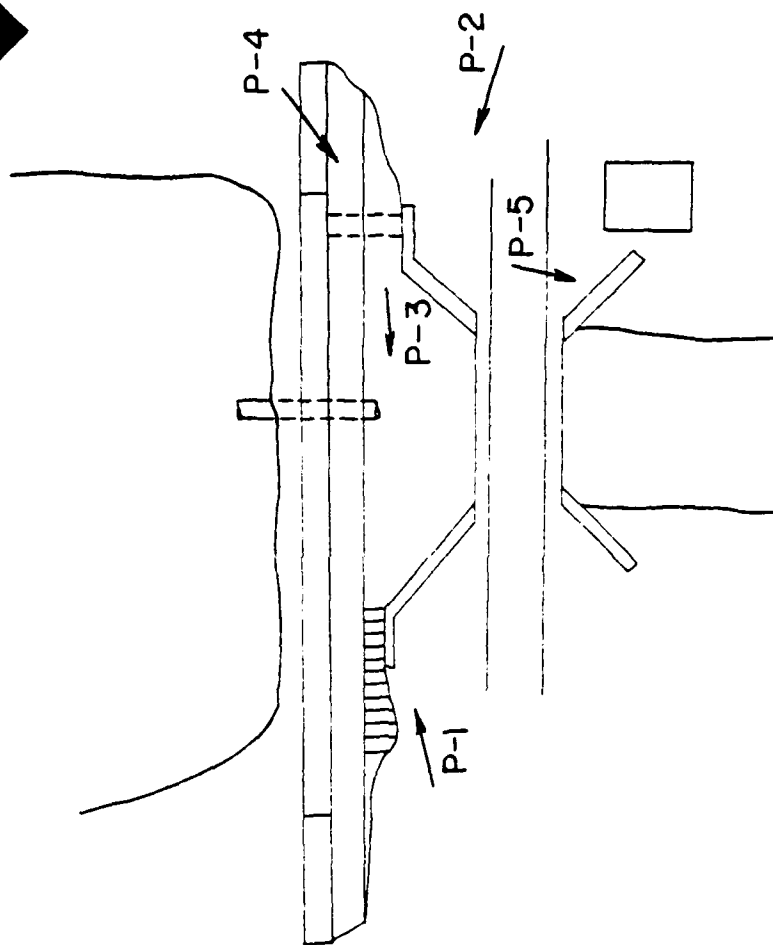
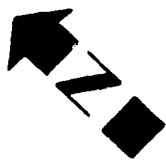
ITEM	REMARKS
AS-BUILT DRAWINGS	None.
REGIONAL VICINITY MAP	U.S.G.S. 7.5 minute quadrangle.
CONSTRUCTION HISTORY	None available. Several photographs available in DER files, taken during various phases of construction.
TYPICAL SECTIONS OF DAM	See drawing E-2.
OUTLETS - PLAN - DETAILS - CONSTRAINTS - DISCHARGE RATINGS RAINFALL/RESERVOIR RECORDS	See Appendix E. See Appendix E. See Appendix E. None. None.

ITEM	REMARKS
DESIGN REPORTS	None.
GEOLOGY REPORTS	None.
DESIGN COMPUTATIONS HYDROLOGY & HYDRAULICS DAM STABILITY SEEPAGE STUDIES	None known to exist. None known to exist. See Appendix G. None.
MATERIALS INVESTIGATIONS BORING RECORDS LABORATORY FIELD	None.
POST-CONSTRUCTION SURVEYS OF DAM	None known to exist.
BORROW SOURCES	Not applicable.

ITEM	REMARKS
MONITORING SYSTEMS	None.
MODIFICATIONS	None known to have occurred other than recent work consisting of reconstruction or repair of the concrete cap on the rubble masonry structure.
HIGH POOL RECORDS	None.
POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS	None known to exist.
PRIOR ACCIDENTS OR FAILURE OF DAM DESCRIPTION REPORTS	No known failures.
MAINTENANCE OPERATION RECORDS	None.

ITEM	REMARKS
SPILLWAY PLAN SECTIONS DETAILS	See Appendix F.
OPERATING EQUIPMENT PLANS & DETAILS	See Appendix F. No information regarding the power facilities.

APPENDIX C
PHOTOGRAPHS



C-1

SAXE POND DAM
PHOTO INDEX



P - INDICATES PHOTO LOCATION

SAXE POND DAM
PA 729

Sheet 1

Front

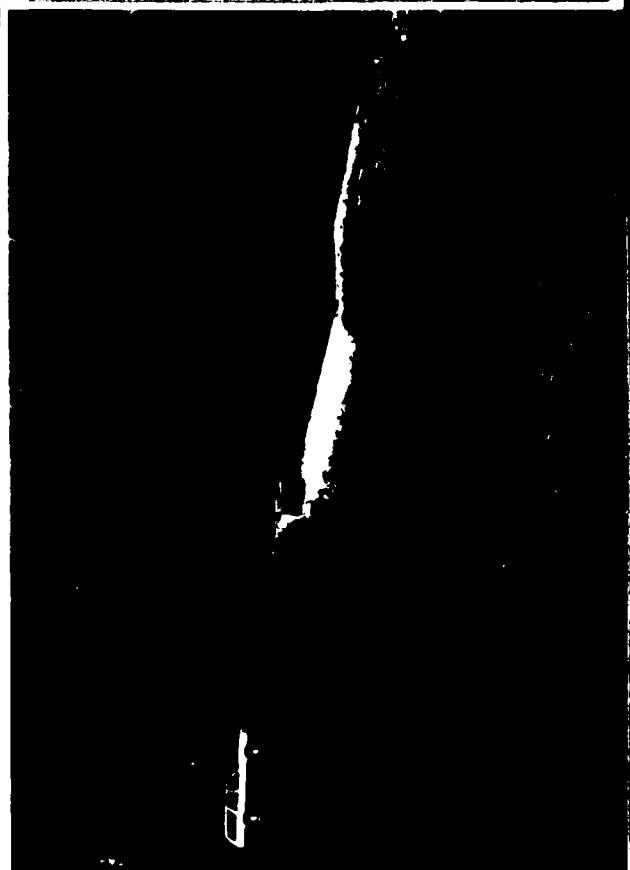
- (1) Upper left - View of the spillway crest, vertical downstream face of the spillway section. Note the steel pipe midway across the downstream face. View towards the left abutment.
- (2) Upper right - Spillway crest and right abutment.
- (3) Lower left - Closeup of the downstream face of the spillway. Note the drainline and the right wingwall of the roadway culvert located directly downstream of the spillway.
- (4) Lower right - View of drainline outlet and roadway culvert.

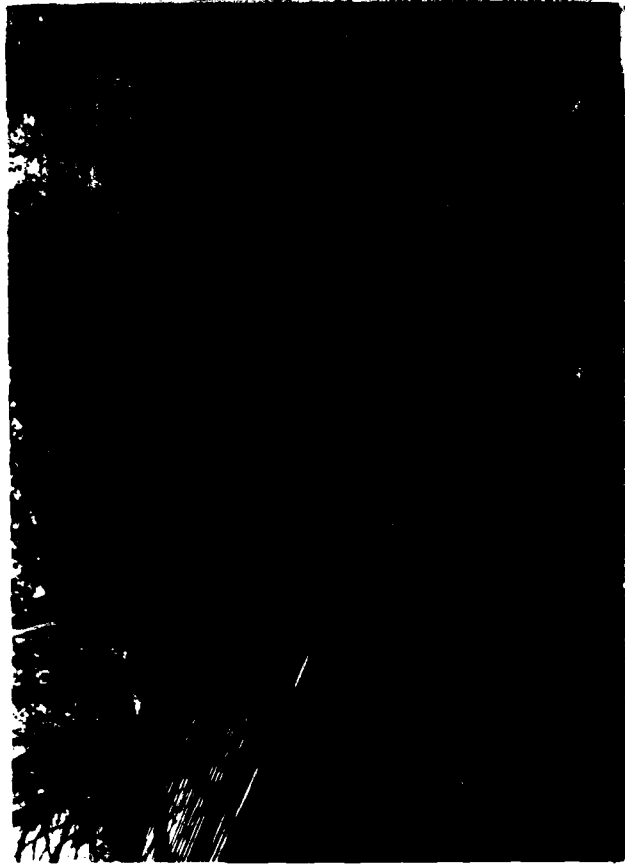
Back

- (5) Upper left - Discharge channel. Note the building on the left embankment of the discharge channel. The building houses the abandoned power generator turbine.
- (6) Upper right - Downstream exposure.

TOP OF PAGE

1,5	2,6
3	4





APPENDIX D
HYDROLOGY AND HYDRAULICS

APPENDIX D

HYDROLOGY AND HYDRAULICS

Methodology. The dam overtopping and breach analyses were accomplished using the systemized computer program HEC-1 (Dam Safety Investigation), September, 1978, prepared by the Hydrologic Engineering Center, U.S. Army Corps of Engineers, Davis, California. A brief description of the methodology used in the analysis is presented below.

1. Precipitation. The Probable Maximum Precipitation (PMP) is derived and determined from regional charts prepared from past rainfall records including "Hydrometeorological Report No. 33" prepared by the U.S. Weather Bureau.

The index rainfall may be reduced from 10% to 20% depending on watershed size by utilization of what is termed the HOP Brook adjustment factor. Distribution of the total rainfall is made by the computer program using distribution methods developed by the Corps.

2. Inflow Hydrograph. The hydrologic analysis used in development of the overtopping potential is based on applying a hypothetical storm to a unit hydrograph to obtain the inflow hydrograph for reservoir routing.

The unit hydrograph is developed using the Snyder method. This method requires calculation of several key parameters. The following list gives these parameters their definition and how they were obtained for these analysis.

Parameter	Definition	Where Obtained
Ct	Coefficient representing variations of watershed	From Corps of Engineers*
L	Length of main stream channel miles	From U.S.G.S. 7.5 minute topographic
Lca	Length on main stream to centroid of watershed	From U.S.G.S. 7.5 minute topographic
Cp	Peaking coefficient	From Corps of Engineers*
A	Watershed size	From U.S.G.S. 7.5 minute topographic

*Developed by the Corps of Engineers on a regional basis for Pennsylvania.

3. Routing. Reservoir routing is accomplished by using Modified Plus routing techniques where the flood hydrograph is routed through reservoir storage. Hydraulic capacities of the outlet works, spillways and the crest of the dam are used as outlet controls in the routing.

The hydraulic capacity of the outlet works can either be calculated and input, or sufficient dimensions input, and the program will calculate an elevation discharge relationship.

Storage in the pool area is defined by an area - elevation relationship from which the computer calculates storage. Surface areas are either planimeted from available mapping or U.S.G.S. 7.5 minute series topographic maps or taken from reasonably accurate design data.

4. Dam Overtopping. Using given percentages of the PMF, the computer program will calculate the percentage of the PMF, which can be controlled by the reservoir and spillway without the dam overtopping.

5. Dam Breach and Downstream Routing. The computer program is equipped to determine the increase in downstream flooding due to failure of the dam caused by overtopping. This is accomplished by routing both the pre-failure peak flow and the peak flow through the breach (calculated by the computer with given input assumptions) at a given point in time and determining the water depth in the downstream channel. Channel cross-sections taken from U.S.G.S. 7.5 minute topographic maps were used in the downstream flood wave routing. Pre and post failure water depths are calculated at locations where cross-sections are input.

HYDROLOGY AND HYDRAULICS ANALYSIS DATA BASE

NAME OF DAM: Saxe Pond Dam

PROBABLE MAXIMUM PRECIPITATION (PMP) = $22.2 (0.98) = 21.76$ inches

STATION	1	2	3
Station Description	Sub-Area A	Sub-Area B	
Drainage Area (square miles)	2.0	1.13	
Cumulative Drainage Area (square miles)	2.0	3.13	
Adjustment of PMF for Drainage Area (%) ⁽¹⁾			
6 hours		117	
12 hours		127	
24 hours		136	
48 hours		143	
72 hours		145	
Snyder Hydrograph Parameters			
Zone ⁽²⁾		11	
C _p ⁽³⁾		0.62	
C _t ⁽³⁾		1.50	
L (miles) ⁽⁴⁾	1.89		1.14
L _{ca} (miles) ⁽⁴⁾	0.76		0.19
t _p = C _t (LxL _{ca}) 0.3 hrs.	1.67		0.95
Spillway Data (Normal Overflow section)			
Crest Length (ft)	66		
Freeboard (ft)	1.6		
Discharge Coefficient	3.1		
Exponent	1.5		

- (1) Hydrometeorological Report 40 (Figure 1), U.S. Weather Bureau and U.S. Army Corps of Engineers, 1965.
- (2) Hydrological zone defined by Corps of Engineers, Baltimore District, for determining Snyder's coefficients (C_p and C_t).
- (3) Snyder's Coefficients.
- (4) L=Length of longest water course from outlet to basin divide.
L_{ca}=Length of water course from outlet to point opposite the centroid of drainage area.

CHECK LIST
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

DRAINAGE AREA CHARACTERISTICS: 3.13 square miles

ELEVATION TOP NORMAL POOL (STORAGE CAPACITY): 1570.0 [154 ac-ft]

ELEVATION TOP FLOOD CONTROL POOL (STORAGE CAPACITY): 1571.6 [264 ac-ft]

ELEVATION MAXIMUM DESIGN POOL: 1572.0

ELEVATION TOP DAM: 1571.60

SPILLWAY CREST:

a. Elevation	<u>1570.0</u>
b. Type	<u>Broad crest</u>
c. Width	<u>6 feet</u>
d. Length	<u>66 feet [crest length, recessed area]</u>
e. Location Spillover	<u>Near mid section</u>
f. Number and Type of Gates	<u>None</u>

OUTLET WORKS:

a. Type	<u>Two 36" diameter cast iron pipes</u>
b. Location	<u>Through structure</u>
c. Entrance inverts	<u>Unknown</u>
d. Exit inverts	<u>Drainline invert-1560.9</u>
e. Emergency drawdown facilities	<u>36" CIP</u>

HYDROMETEOROLOGICAL GAUGES:

a. Type	<u>None</u>
b. Location	<u>None</u>
c. Records	<u>None</u>

MAXIMUM NON-DAMAGING DISCHARGE: Unknown

101
102
103
104

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CONSULTING ENGINEERS & ARCHITECTS
EDENSBURG PENNSYLVANIA

NAME SAXE POND DAM
NUMBER DA-729

SHEET NO. 1 OF
BY OTM DATE 3/81

LOSS RATE AND BASE FLOW PARAMETERS

AS RECOMMENDED BY THE BALTIMORE DISTRICT
CORPS OF ENGINEERS.

STRTL = 1 INCH
CNSTL = 0.05 IN/H₂O
STR-Q = 1.5 CFS/M²
QCCCN = 0.05 (5% OF PEAK FLOW)
RTIOR = 2.0

ELEVATION-AREA-CAPACITY RELATIONSHIPS

FROM USGS, 7.5 MIN. QUANT. DER FILES AND FIELD
INSPECTION DATA.

SPILLWAY CREST ELEVATION ASSUMED (USGS) = 1570.0
INITIAL STORAGE (DER) = 153.4 AC. FT
AREA OF NORMAL POOL (USGS) = 64.3 ACRES

FROM THE CONIC METHOD FOR RESERVOIR VOLUME.
FLOOD HYDROGRAPH PACKAGE (HEC-1), DAM SAFETY
VERSION (USER'S MANUAL)

$$\begin{aligned} H &= 3Y/A \\ &= 3(153.4)/64.3 \\ &= 7.16' \text{ USE } 7.2' \end{aligned}$$

ELEVATION WHERE AREA EQUALS ZERO;
1570.0' - 7.2' = 1562.8'

FROM USGS.

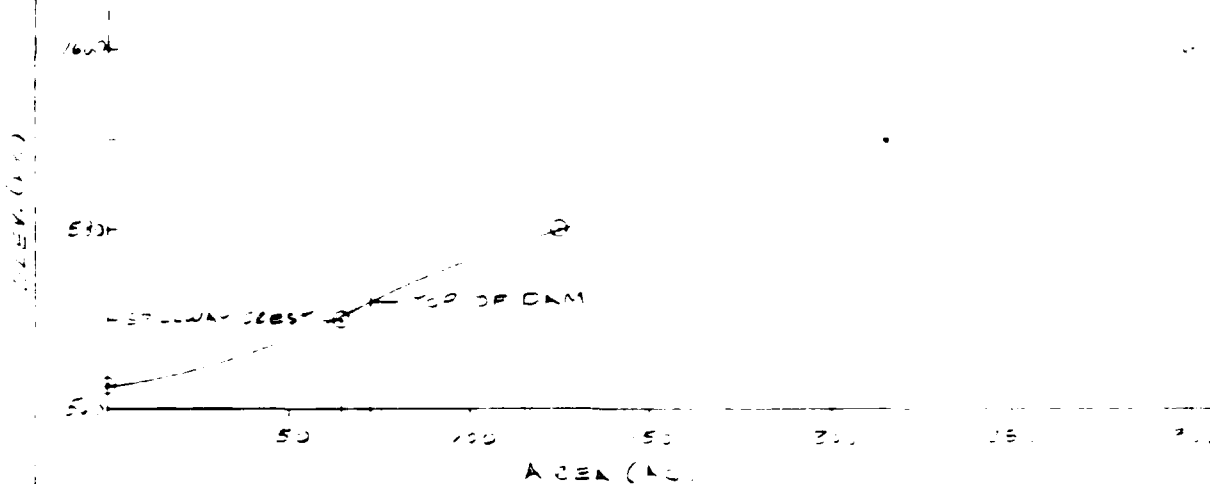
AT ELEV. 1580, AREA = 124 ACRES
AT ELEV. 1600, AREA = 298 ACRES

TOP OF DAM LOW SPOT ELEVATION = 1571.6

L. ROBERT KIMBALL & ASSOCIATES
CONSULTING ENGINEERS & ARCHITECTS
EBENSBURG PENNSYLVANIA

NAME _____
NUMBER DA-729

SHEET NO 2 OF _____
BY STM DATE 3 31

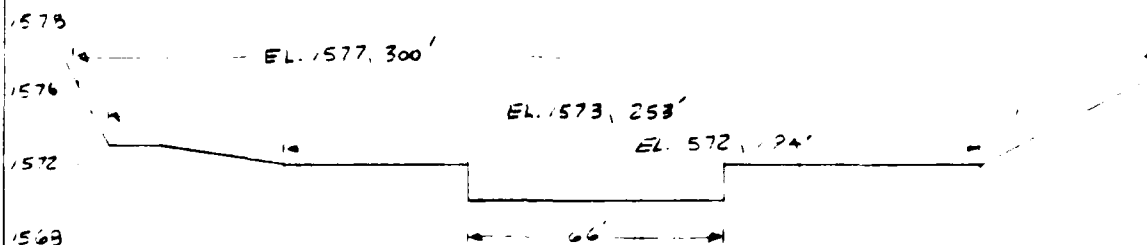


AREA AC	0	67.3	73	84	115	228
ELEV. FEET	570.8	570	571.0	571	572	578

SCOURGE DATA

$$Q_1 = C L H^{3/2} \quad \text{USE } C = 3.1 \text{ (BRAD REST)} \quad \left. \begin{array}{l} \text{SPILLWAY} \\ L = 66' \text{ FROM } 570 \text{ TO } 576 \end{array} \right\}$$

$$Q_{OVERTOP} = C L H^{3/2} \quad \text{USE } C = 2.9 \\ L = \text{VARIES WITH } H$$



100
100
100
100
100

L. ROBERT KIMBALL & ASSOCIATES
CONSULTING ENGINEERS & ARCHITECTS
EBENSBURG PENNSYLVANIA

NAME _____
NUMBER PA-729

SHEET NO. 3 OF _____
BY OTM DATE 3/91

ELEV FT.	SPILLWAY			OVERTOP			DISCHARGE CFS
	A (FT)	L (FT)	Q (CFS)	A (FT)	L (FT)	Q (CFS)	
510	0	00	0				0
511			3.5				205
511.5			4.5				45
512				1.4	24	140	555
513				1.4	253	15	630
514				2.4	264	3345	3200
515				3.4	270	4445	5300
516				4.4	290	7700	575
517				5.4	300	1075	530

1. SPILLWAY HEADWATER 5 CFS

FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION JULY 1978
LAST MODIFICATION 01 APR 80

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34					
A1	A2	A3	B	B1	J	J1	K	K1	M	P	T	W	X	K	K1	M	P	T	W	X	K	K1	K	K1	Y	Y1	Y4	Y5	SA	SE1562.8	SS	SD1571.6	K					
																																ANALYSIS OF DAM OVERTOPPING USING RATIOS OF THE PMF						
																																HYDROLOGIC-HYDRAULIC ANALYSIS OF SAFETY OF SAGE POND DAM						
																																RATIOS OF PMF ROUTED THROUGH THE RESERVOIR (PA-729)						
288	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
5	1	4	1	1	1	0.5	1	1	2.0	117	127	136	143	145	0.05	1	145	1.0	0.05	1	145	1.0	0.05	1	145	1.0	0.05	1	145	1.0	0.05	1	145	1.0	0.05			
																																INFLOW SUB-AREA A						
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
																																INFLOW SUB-AREA B						
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
0.95	0.62	-1.5	-0.05	2.0	0.95	0.62	-1.5	-0.05	2.0	0.95	0.62	-1.5	-0.05	2.0	0.95	0.62	-1.5	-0.05	2.0	0.95	0.62	-1.5	-0.05	2.0	0.95	0.62	-1.5	-0.05	2.0	0.95	0.62	-1.5	-0.05	2.0				
																																COMBINE						
																																ROUTE THROUGH SAGE POND						
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
1570	1571	1571.6	1572	1573	1574	1575	1576	1577	1578	1579	1580	1581	1582	1583	1584	1585	1586	1587	1588	1589	1590	1591	1592	1593	1594	1595	1596	1597	1598	1599	1600	1601	1602	1603				
0	205	415	555	630	715	800	885	970	1055	1140	1225	1310	1395	1480	1565	1650	1735	1820	1905	1990	2075	2160	2245	2330	2415	2500	2585	2670	2755	2840	2925	3010	3095					
0	64.3	73	124	215	298	381	464	547	630	713	796	879	962	1045	1128	1211	1294	1377	1460	1543	1626	1709	1792	1875	1958	2041	2124	2207	2290	2373	2456	2539	2622					
1570	1570	1571.6	1580	1590	1600	1610	1620	1630	1640	1650	1660	1670	1680	1690	1700	1710	1720	1730	1740	1750	1760	1770	1780	1790	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890				

 FLOOD HYDROGRAPH PACKAGE (HEC-1)
 DAM SAFETY VERSION JULY 1978
 LAST MODIFICATION 01 APR 80

RUN DATE= 01/03/05.
 TIME= 17.15.57.

ANALYSIS OF DAM OVERTOPPING USING RATIOS OF THE PMF
 HYDROLOGIC-HYDRAULIC ANALYSIS OF SAFETY OF SAFE POND DAM
 RATIOS OF PMF ROUTED THROUGH THE RESERVOIR (PA-729)

JOB SPECIFICATION

NO	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
288	0	15	0	0	0	0	0	0	0
	JOPER			NWT	LROPT	TRACE			
	5			0	0	0			

MULTI-PLAN ANALYSES TO BE PERFORMED

RTIOS= .10 .30 .50 1.00
 NPLAN= 1 NRATIO= 4 LRATIO= 1

SUB-AREA RUNOFF COMPUTATION

INFLOW SUB-AREA A

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	TAUTO
1	0	0	0	0	0	0	0	0

HYDROGRAPH DATA

IHYDG	IUNG	TAKEA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	2.00	0.00	2.00	1.00	0.000	0	1	0

PRECIP DATA

SPEE	PMS	R6	R12	R24	R48	R72	R96
0.00	21.76	117.00	127.00	136.00	143.00	145.00	0.00

LOSS DATA

LROPT	STKR	DLTKR	RTIOL	ERAIN	STKS	RTIUK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	1.00	.05	0.00	0.00

UNIT HYDROGRAPH DATA

7/6

TP= 1.67 CP= .62 NTA= 0

RECESSION DATA

STRTO= -1.50 ORCSN= -.05 RTIOR= 2.00
 APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.60 AND R= 6.29 INTERVALS

UNIT HYDROGRAPH 38 END-OF-PERIOD ORDNATES, LAG= 1.68 HOURS, CP= .62 VOL= 1.00	
26.	94.
297.	253.
60.	51.
293.	188.
184.	216.
157.	44.
32.	37.
455.	
134.	
21.	
23.	
483.	
114.	
97.	
20.	
464.	
348.	
71.	
14.	
408.	
83.	
17.	

HYDROGRAPH ROUTING

ROUTE THROUGH SAGE POND

1STAO 1COMP 1
3 1
ULOSS CLOSS AVG
0.0 0.000 0.00
NSTPS NSTDL 0
1 0
IECON ITAPE JPLT JPRT INAME ISTAGE IAUTO
0 0 0 0 1 0
ROUTING DATA
IRES ISAME IOPT IPMP LSTR
1 1 0 0 0
LAG ANSKK X TSK STORA ISPRAT
0 0.000 0.000 0.000 -1570. -1

STAGE 1570.00 1570.00 1571.60 1572.00 1573.00 1574.00 1575.00 1576.00 1577.00
FLOW 0.00 205.00 415.00 555.00 630.00 3260.00 5360.00 8175.00 11330.00
SURFACE AREA= 0. 64. 73. 124. 215. 298.
CAPACITY= 0. 154. 264. 1082. 2756. 5310.

ELEVATION= 1563. 1570. 1572. 1580. 1590. 1600.
CREL SPWID COWW EXPW ELEV COOL CAREA EXPL
1570.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
DAM DATA
TUPEL COOD EXPD DAMWID
1571.6 0.0 0.0 0.

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
 FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
 AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIO	RATIOS APPLIED TO FLOWS			
					RATIO 1	RATIO 2	RATIO 3	RATIO 4
					.10	.30	.50	1.00
H ROGRAPH AT	1	2.00	1	708.	2124.	3539.	7079.	
	(5.18)	(20.05)	60.14)	100.23)	200.45)	
HYDROGRAPH AT	2	1.13	1	533.	1600.	2667.	5333.	
	(2.93)	(15.10)	45.30)	75.51)	151.02)	
Z COMBINED	2	3.13	1	1158.	3474.	5790.	11580.	
	(8.11)	(32.79)	98.37)	163.96)	327.91)	
ROUTED TO	3	3.13	1	889.	3154.	5393.	11057.	
	(8.11)	(25.16)	89.32)	152.72)	313.09)	

4/6

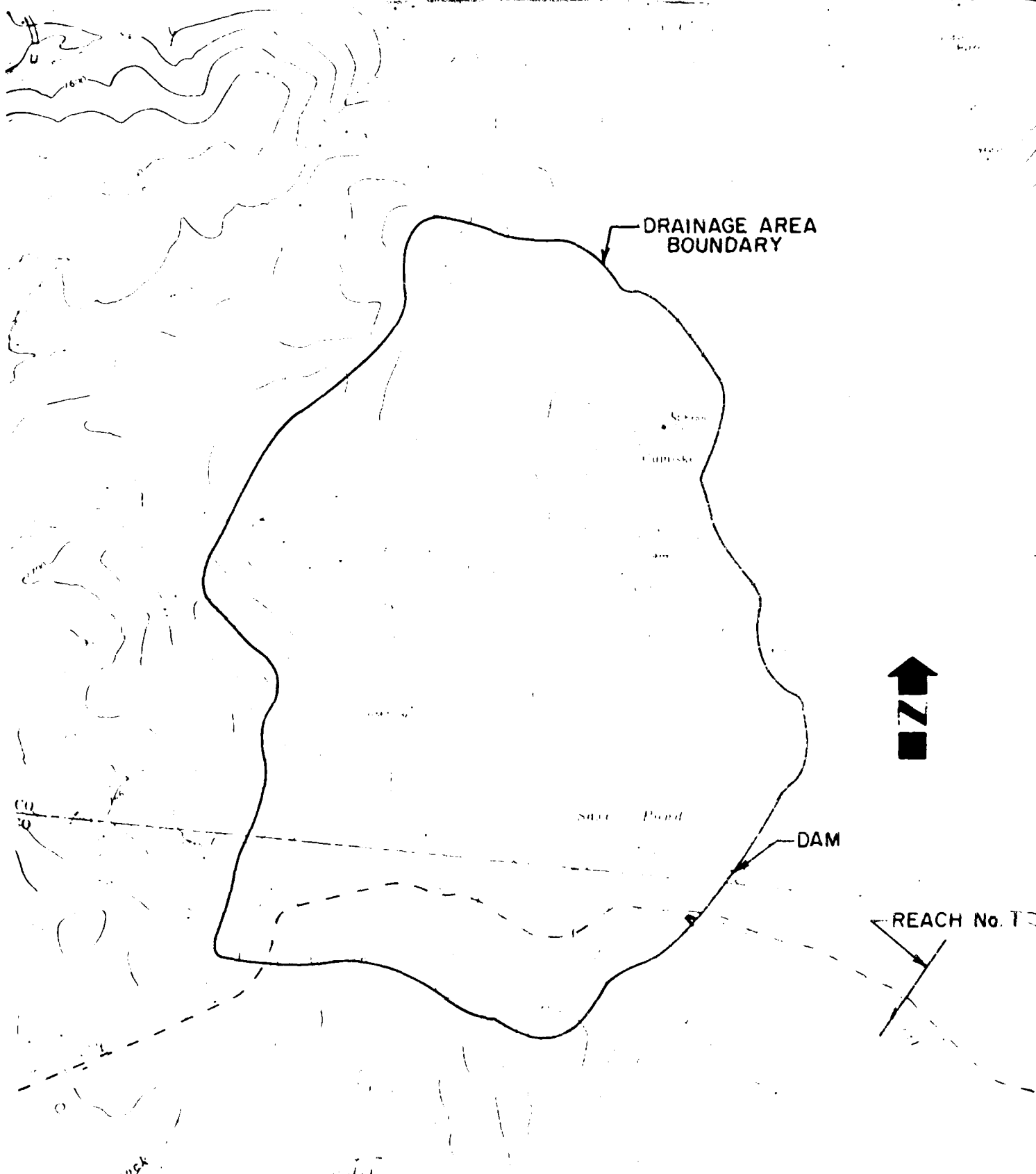
SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1

ELEVATION STORAGE OUTFLOW	INITIAL VALUE 1570.00 154. 0.	SPILLWAY CREST 1570.00 154. 0.	TOP OF DAM 1571.60 264. 415.
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RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
.10	1572.31	.71	317.	899.	5.00	42.25	0.00
.30	1573.94	2.34	449.	3154.	9.50	41.50	0.00
.50	1575.01	3.41	545.	5393.	11.25	41.50	0.00
1.00	1576.91	5.31	731.	11057.	16.00	41.25	0.00

APPENDIX E
DRAWINGS



COLLEY QUADRANGLE
7.5 MINUTE SERIES

E-1

SAXE POND DAM
DOWNSTREAM EXPOSURE MAP
SCALE: 1" = 2000'
L. ROBERT KIMBALL & ASSOCIATES CONSULTING ENGINEERS & ARCHITECTS

GENERAL PLAN
PROPOSED PRIVATE DAM OF WILLIAM SAXE
WILMOT TOWNSHIP BRADFORD COUNTY SULLIVAN COUNTY

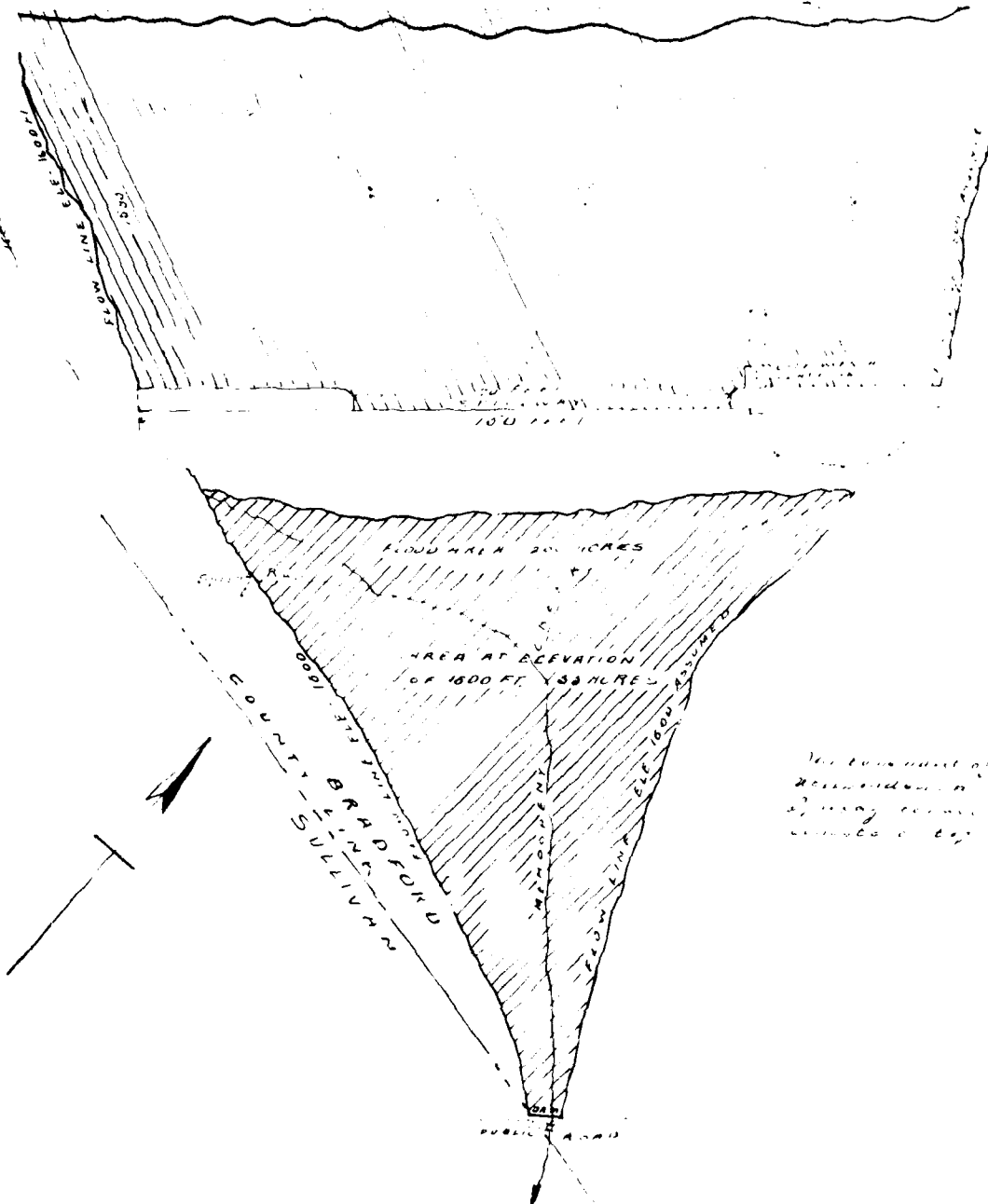


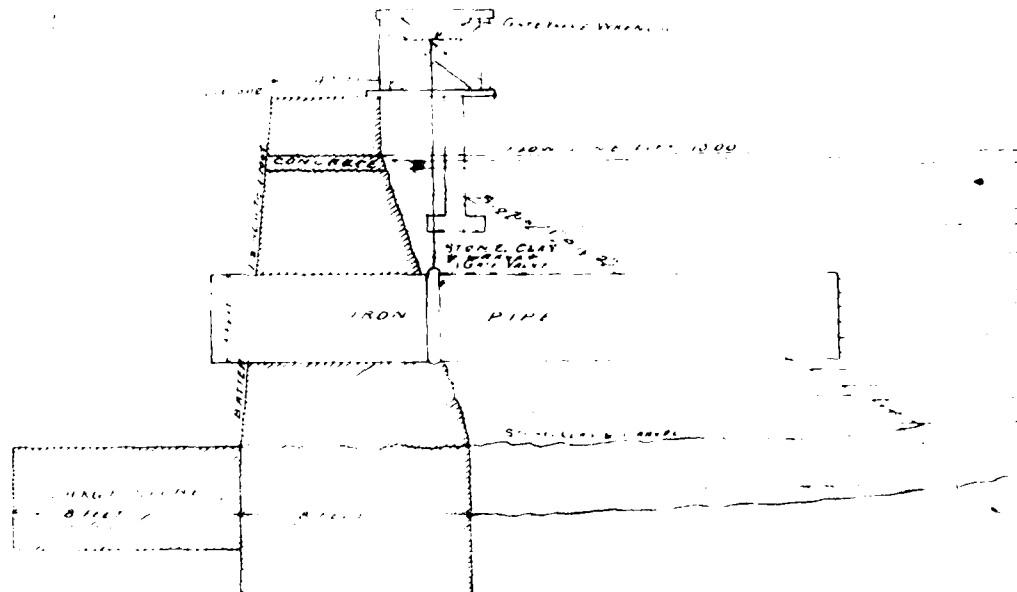
CHART 1000
- 1000 -

The boundary of the State of New York
as shown on the map is based on the
survey of the State of New York
and is not to be mistaken.

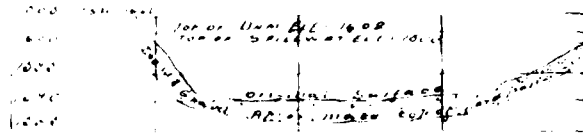
PROPOSED
PRIVATE DAM OF
WILLIAM SAXE
WILMOT TOWNSHIP
BRADFORD COUNTY

SCALE 1 INCH = 400 FEET DATE SEP. 18 1924

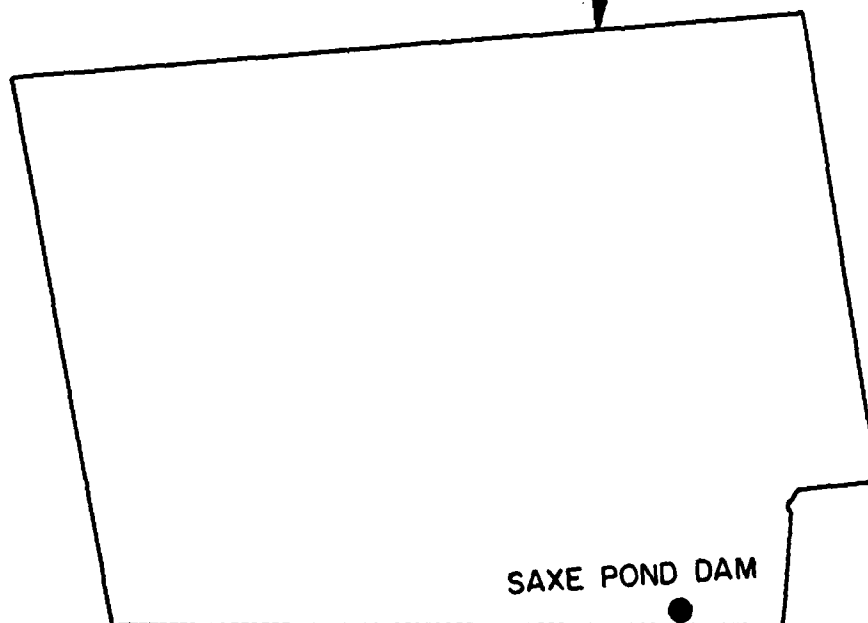
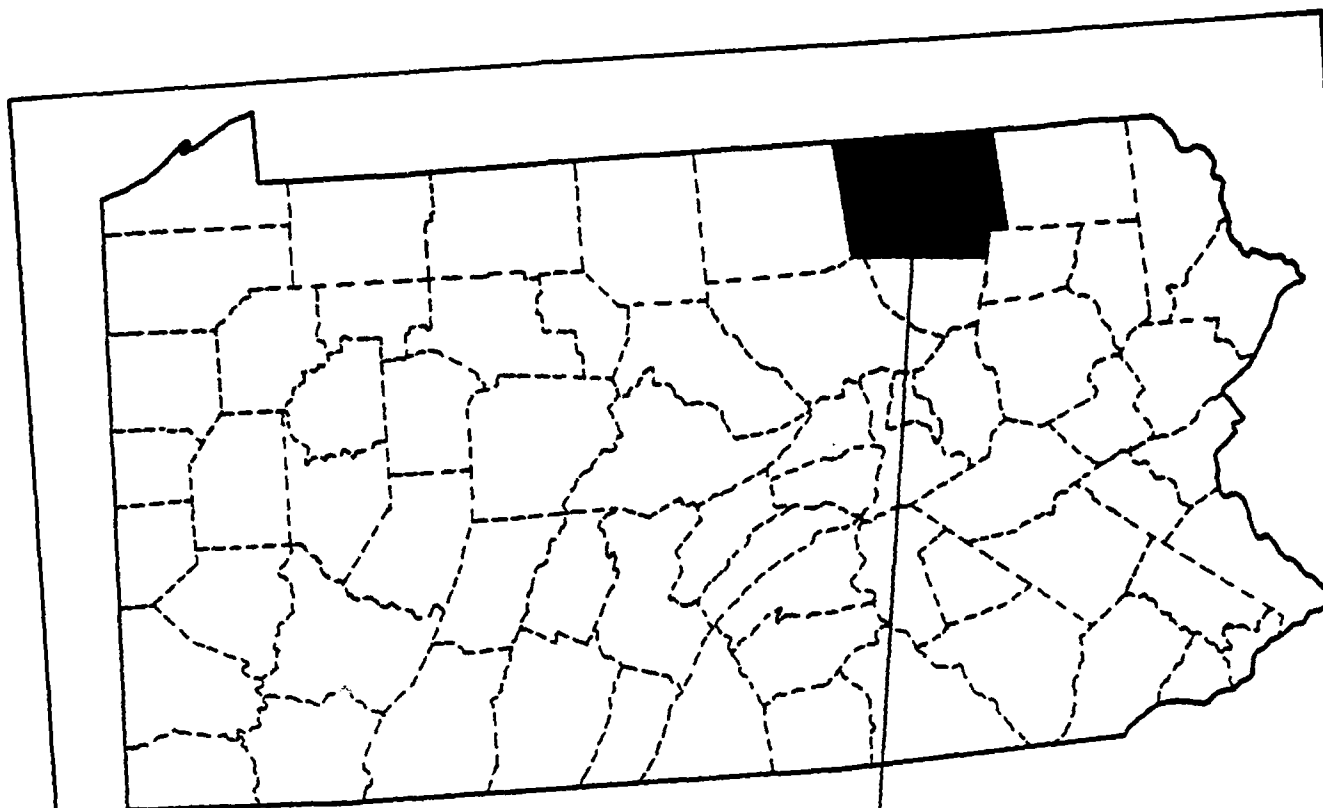
WILMOT TOWNSHIP
BRADFORD COUNTY



CROSS SECTION
PROPOSED
PRIVATE DAM, WILLIAM SAXE
SCALE 1 INCH = 4 FEET



LONGITUDINAL SECTION
PROPOSED
PRIVATE DAM OF WILLIAM SAXE
WILMOT TOWNSHIP
BRADFORD COUNTY
VERTICAL SCALE 1 INCH = 20 FEET
HORIZONTAL SCALE 1 INCH = 40 FEET



SITE LOCATION MAP
BRADFORD COUNTY, PENNSYLVANIA

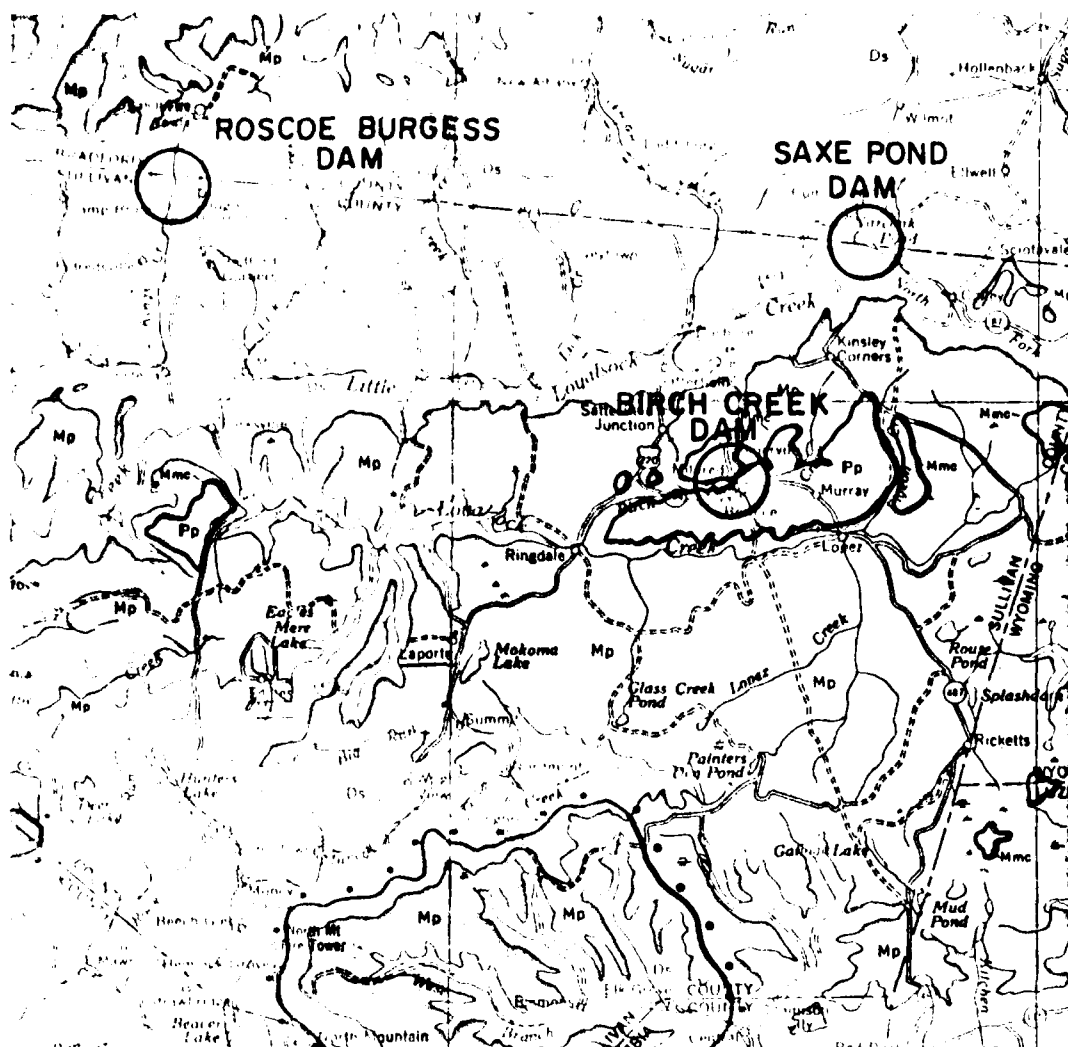
APPENDIX F
GEOLOGY

General Geology

The Saxe Pond Dam is located in the (Glaciated) Low Plateaus Section of the Appalachian Plateaus Province. The area is a deeply dissected portion of the Appalachian Plateau, once covered by the Wisconsin glacier of Pleistocene time. The advance and retreat of this ice left behind glacial drift or outwash. These deposits are the most productive water-bearing materials in the area.

The rock formations exposed near Saxe Pond Dam range in age from the Oswayo Formation (youngest) to the Marine Beds (oldest) which include the 'Chemung' and 'Portage' beds. Both formations and the Catskill Formation between them belong to the Susquehanna Group of Upper Devonian Age. They consist of sandstones, shales, and graywackes. The dam is situated on the Catskill side of the Catskill/Chemung contact.

Structurally, these strata strike to the northeast and dip toward the southeast in the study area. This is due to the dam being located on the southeast limb of the Wilmot Anticline. The geologic structure is typical of the Plateaus province, where the principal folds trend northeast. No major faulting is indicated in the vicinity of the Saxe Pond Dam.



GEOLOGIC MAP OF AREA AROUND SAXE POND DAM, ROSCOE BURGESS DAM AND THE BIRCH CREEK DAM

SCALE 1:250,000

PENNSYLVANIAN



Atchafalaya Group
 (See map of Pennsylvania for details)

MISSISSIPPIAN



Marble Fork Formation
 (See map of Pennsylvania for details)



Marble Fork Formation
 (See map of Pennsylvania for details)

DEVONIAN

UPPER
 CENTRAL AND EASTERN PENNSYLVANIA



Issaquah Formation
 (See map of Pennsylvania for details)

Catskill Formation
 (See map of Pennsylvania for details)

Marine beds
 (See map of Pennsylvania for details)



Susquehanna Group

Barbed line is "Chemung Catskill" contact at Second Pennsylvania Survey. County reports barbs on "Chemung" side of line.

DATE
ILME